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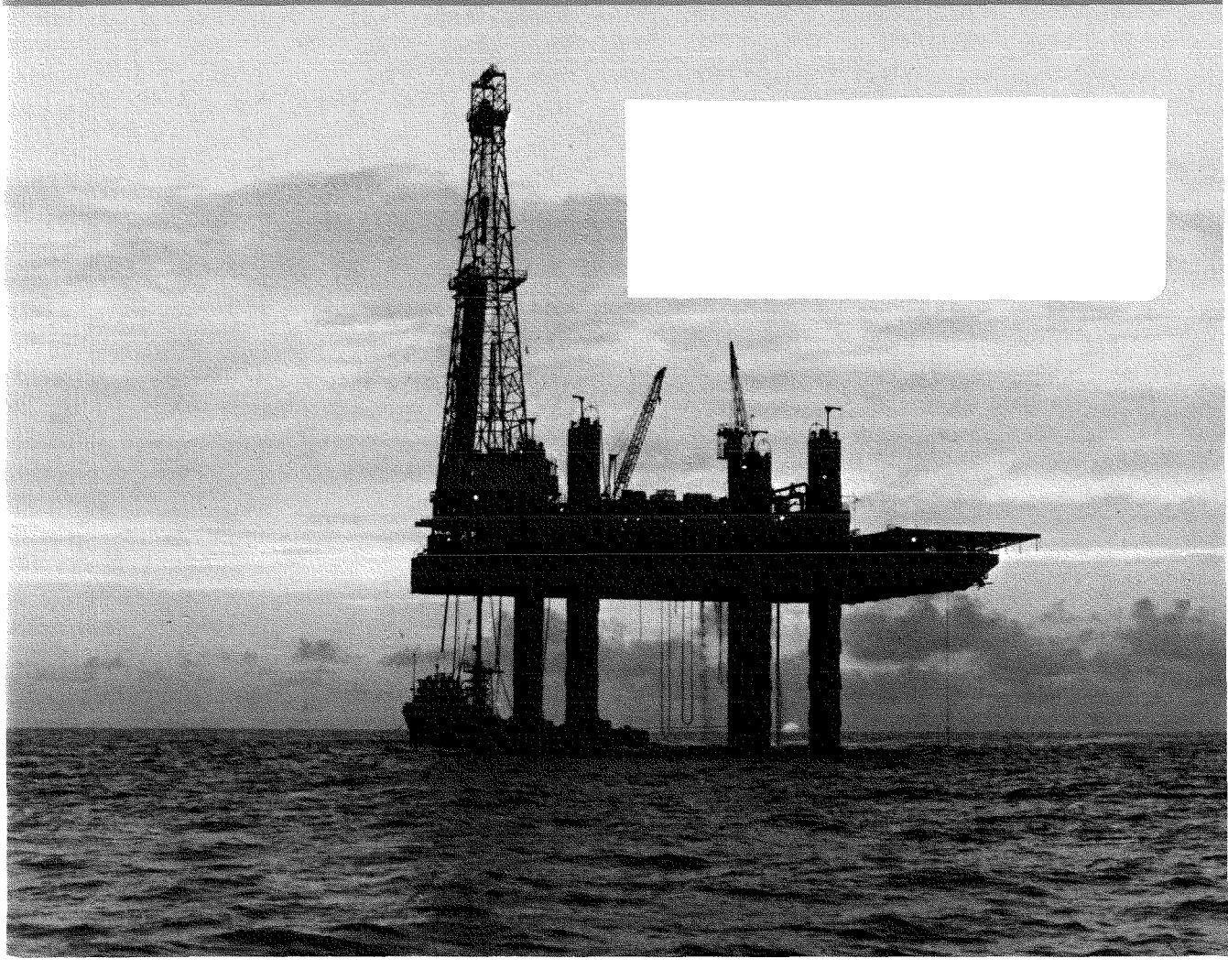
FEDERAL RESERVE BANK OF SAN FRANCISCO

WESTERN ENERGY AND GROWTH



California — End of Growth?

William Burke

California is the nation's trend-setter, and its shift to a pattern of slower growth in recent years thus has important implications for the broader national economy as well as for its own future. True enough, the state's economy generated $125 billion in personal income in 1974, or about one-ninth of the national total. (In terms of income, California by itself would easily rank among the world's ten largest nation-states.) But the growth which brought California to its present eminence has created a treadmill effect, which results in serious adjustment problems whenever the treadmill slows down. In even the mildest business recession, unemployment soars and other signs of stress appear. In 1971, for example, the jobless rate averaged 8.8 percent—greater by half than the national rate—and in the first half of 1975 it reached a record 9.7 percent.

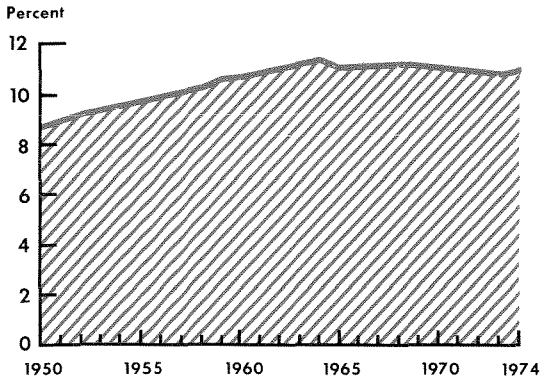
For more than a century, rapid economic growth has been the hallmark of the California experience, and the economy frequently appears rudderless in periods such as the present, when there is no new growth sector on the horizon. The state's history has usually been written in terms of successive boom periods, based upon such leading sectors as gold, wheat, food processing, oil, the military, and (perennially) land development. The rapid expansion of the aerospace-electronics industry in the past quarter-century has been only the latest in a long series of booms transforming the California landscape. However, busts have been just as much a part of California history as booms, and the major question of the 1970's concerns the state's ability to weather both a cyclical recession and the maturing of the key aerospace-electronics sector.

Any economy of California's present size, with its heavy consumer, business, and public-works demand, is better able to sustain long-range economic growth in the face of cyclical downturns than a smaller area would be. But the state's economy has diversity as well as size in its favor. California's aerospace-related activities account for 19 percent of the nation's income from that source, but at the same time they account for only about 5½ percent of the state's total income. California's farmers lead the nation with 10½ percent of U.S. farm income, but they account directly for less than 3 percent of the state's total income. Similarly, California's builders lead the nation with 9 percent of U.S. construction income, but they account for only 4 percent of the state's total income. California thus boasts a welcome diversity that normally cushions downturns occurring in any one sector and thereby provides a strong underpinning for well-balanced growth.

As a reflection of its earlier troubles, California entered the recent recession with a much higher jobless rate than the rest of the nation. However, the recession itself was not so steep in California, largely because it is less dependent than the nation on autos and other cyclical industries. Civilian employment elsewhere in the nation dropped at a 6.2-percent annual rate between the September 1974 high and the March 1975 low, while California employment dropped at a 2.6-percent rate during this period. Thus, the margin between California's jobless rate and the fast-rising national rate narrowed to one percentage point in the first half of 1975, compared to a spread of 1½ to 2 percentage points during the several preceding years.

Chart 1

California Share of U.S. Personal Income



Nonetheless, this recession period aside, California has declined in importance relative to the rest of the nation over the past decade. In the preceding decade (1954-64), California's share of the nation's personal income jumped from 9.5 percent to 11.4 percent, but then the state began to lag, so that its share of total income then fell to 10.9 percent in 1974 (Chart 1). The relative decline was less noticeable in real terms, because consumer prices rose more slowly in California than in the nation over this past decade. However, the contrast was quite striking in relation to what went before. Real personal income increased nationwide by 48.6 percent between 1954 and 1964, and by almost the same amount (46.0 percent) between 1964 and 1974, but California's real growth declined from 70.4 percent in 1954-64 to 44.4 percent in the 1964-74 period.

California's relative performance over the past decade can be measured by analyzing, for each income category, three separate sources of growth—national growth, industry mix, and regional share (see table).[1] The "national growth" effect can be calculated by assuming that California had precisely the same structural mix of income sources as the nation possessed at the outset of the period, and that each of those sectors then grew at the same rate in California as in the nation. The "industry mix" effect reflects the relative importance in the West of national fast-growing (or slow-growing) income sources.

CALIFORNIA REAL PERSONAL INCOME—
EFFECT OF GROWTH FACTORS (1964-74)
(Billions of 1974 dollars)

Source of Income	Personal Income 1964	Growth Factors			Personal Income 1974
		National Growth	Industry Mix	Regional Share	
Agriculture	2.43	1.12	–0.26	0.04	3.32
Aerospace manufacturing	6.57	3.02	–1.78	–0.97	6.86
Other manufacturing	10.61	4.88	–1.76	0.80	14.54
Mining	0.42	0.19	–0.09	–0.05	0.47
Construction	4.91	2.26	–0.07	–2.01	5.09
Trade	12.44	5.72	–1.63	–0.35	16.18
Finance	3.95	1.82	–0.02	–0.40	5.36
Transportation and utilities	4.60	2.12	–0.29	0.62	7.04
Professional and social services	5.41	2.49	2.05	0.05	10.00
Other services	5.79	2.66	–1.16	–0.30	7.00
Federal government	5.04	2.32	–0.55	0.30	7.10
State-local government	7.48	3.44	2.51	–0.72	12.72
Property income	12.48	5.74	–0.11	0.57	18.68
Transfer payments	6.76	3.11	5.92	0.57	16.36
Total personal income	86.84				125.38

Note: Total includes items not shown separately. Rows do not necessarily add across because of rounding.

The "regional share" effect reflects the growth of individual California income sources in relation to their national counterparts.

California's 1964-74 increase in real income was based almost entirely upon its similarity to national income patterns (national-growth effect). In contrast to earlier periods of rapid growth, its income structure was weighted more toward slow-growing than fast-growing sources of national income growth (industry-mix effect). Indeed, only 3 of its 14 income categories recorded positive growth from this source —professional and social services, state-local government, and (above all) transfer payments, such as social-security benefits and unemployment insurance. Much of the weakness in this respect stemmed from the importance in the California economy of such national slow-growers as aerospace manufacturing, other manufacturing and trade. More particularly, and in even greater contrast to earlier periods of rapid growth, most of California's individual industries lagged behind their national counterparts (regional-share effect). The slowdown was especially noticeable for such traditional fast growers as construction, aerospace manufacturing, and state-local government.

As these income shifts indicate, the state faces serious problems, not least of them being the continuous reshaping of earlier growth sectors along more modest lines. Another basic problem concerns the ability of the state and its people to adjust their planning to a state of affairs where the possibility—or even the desirability—of rapid growth can no longer go unquestioned. After a century of equating rapid growth with virtue, Californians may find it difficult to make the necessary adjustments.

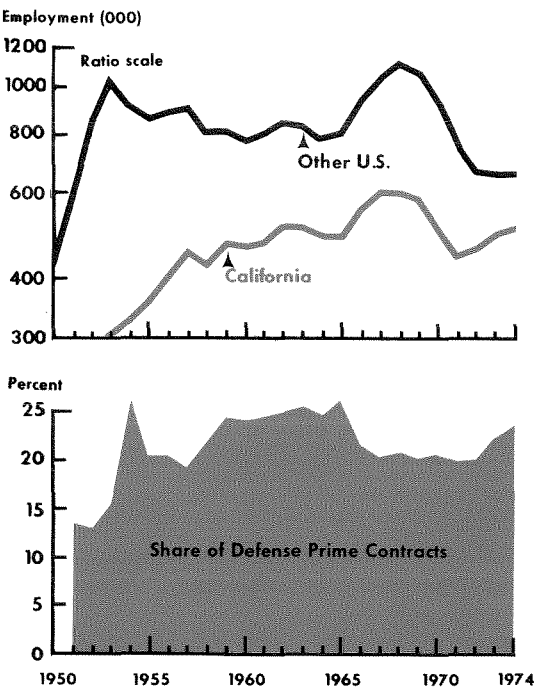
Crucial Role of Aerospace

The state's problems are exemplified by the bellwether aerospace-electronics industry. At its peak in 1967-68, the industry employed more than 600,000 workers, under the stimulus of the Vietnam war, the space race, the commercial-aircraft boom, and the consumer-electronics boom. Then each of these sources of demand weakened, throwing 180,000 people out of work and leading to a state-wide slump even before the onset of the 1970 national recession. Recovery from the slump began around mid-1971, helped along by the Congressional rescue of Lockheed and its L-1011 transport project with a $250-million loan. (At the same time, Congress let Boeing's supersonic transport project die, and for a prolonged period Seattle became even more depressed than Southern California.) The strengthening of military and (later) commercial business provided support for a rebound, but by the onset of the next recession only about one-third of the lost jobs had been recovered (Chart 2).

California's aerospace industry has been based from the very beginning upon heavy injections of federal money. In 1974, defense and

Chart 2

Aerospace: Employment & California Contract Share



space-agency contract awards reached a new peak of $8.9 billion—23 percent of the national total—and thereby helped offset the developing weakness in commercial-aircraft and civilian-electronics business. Only one major new project has gotten underway in recent years—the space-shuttle project—but awards for ongoing aircraft and missile contracts have risen sharply since 1971, and thereby have contributed to the industry recovery. The state's economy thus relies heavily upon political decisions made in Washington about the product-mix of the national aerospace industry. Aerospace systems in the 1960's and 1970's have been grouped in six major functional categories—bombers, fighters, transports (and associated commercial products), missile systems, anti-missile systems and space systems. The 24 major aerospace systems which have been developed in this period have come from one or another of the industry's nine major production lines, three of which are in California.[2]

In the past, each phasing-out of a major government contract generally has coincided with the phasing-in of a new one, with the contract for the new system being awarded two to three years before the scheduled termination of the old system. But since the national industry markets only a half-dozen major products, logic might dictate that only a half-dozen production lines be kept in operation, especially since most of the major systems are due to come to the end of their production runs within the next several years. On the other hand, past experience suggests that government contracts will be found to keep most if not all of the present production lines in continued operation. Despite the recent upturn in military and space spending, individual firms could remain on rather skimpy rations, at least by past standards, as the available federal funds are distributed on a fairly even basis among all present producers.

One alternative would be to concentrate more attention on the commercial-aircraft business, especially in view of the worldwide popularity of American jets, which have become even more popular in recent years because of the bargain-basement prices caused by the several devaluations of the dollar. However, the commercial market has long been dominated by a few Douglas and (especially) Boeing models, and new entrants into the market have had relatively little success. Moreover, a general slowdown in commercial orders now seems inevitable, partly because of the recession-affected traffic and earnings reports of the major airlines, and also because of the cutbacks in scheduled flights necessitated by the soaring price of jet fuel.

Another alternative for the industry would be to diversify into non-aerospace business, a solution which has led to many troubles in the past. In the severe postwar slump of the late-1940's, many producers turned to making such products as aluminum canoes, but these products sank without a trace in the vast and unfamiliar consumer marketplace. In more recent times, the electronics segment of the industry has developed a number of successful new products for the business and consumer markets, but this sector is today engaged in one of its periodic shakeouts. Several aerospace firms have attempted to break into the surface-transportation field by providing equipment for the Bay Area Rapid Transit system, but their work on that project has been marred by prolonged scheduling delays, substantial cost overruns and other features typical of aerospace production at its worst. This experience led David Packard, former Deputy Secretary of Defense, to conclude, "The industry does not yet know how to build complex reliable equipment at reasonable cost."[3]

Contribution of the Knowledge Industry

The problems of California's aerospace industry will be solved not just by the infusion of more federal money, but also by the continued health of the "knowledge" industry, with which it has long maintained a symbiotic relationship. The fortunes of the highly technical aerospace sector, with its reliance on the continued development of advanced and sophisticated products,

have been closely tied for decades to the breakthroughs achieved in university laboratories and research centers. The industry has found an especially fertile field in California, which advertises four of the top dozen or so graduate schools in the nation. These schools attract large numbers of top-flight students, and thus a disproportionately large share of the nation's new scientists and engineers.

California's dominance in aerospace has come about because of the continued excellence of these educational and research facilities—facilities which have originated a circular development process whereby research contracts generate production contracts, which make possible stronger research staffs, which generate new research contracts, and so on. (The key resource, skilled scientific manpower, also has been attracted by the state's highly touted sun, sea and sky, despite all the deterioration in this respect in recent decades.) In the last analysis, California's economic growth depends heavily on investment in education, or human capital. This type of investment helps explain the observed discrepancy between the nation's rate of economic output and the much smaller rate of increase in measurable inputs of labor, capital and resources. Indeed, many economists argue generally that the greatest contribution to growth is made by increased education and related advancements in knowledge.[4]

Yet, California and the nation have recently shown that they are no longer willing to invest ever-increasing sums in the knowledge industry. One major cause has been the decline in federal funding of projects which had expanded rapidly during the Great Society and the Vietnam war. Other factors have included public dissatisfaction with both the war and the antiwar movement—especially in Berkeley, the cradle of the college revolution—and the reaction against the post-Sputnik glorification of science. In addition, many California voters tend to believe that the state's higher-education system involves a redistribution of income from poorer families to higher-income families, as a result of the state's somewhat regressive tax structure as well as the substantial state support of prestigious institutions where higher-income students are mostly concentrated.

Federal support for the nation's higher-education establishment, after increasing five-fold in the 1960's, began to slow down even before the end of the decade. For example, the number of federally-supported first-year graduate fellowships dropped 62 percent nationwide between 1968 and 1972. In California, despite continued increases in dollars spent on education, the university system's instructional budget per full-time student dropped 20 percent in real terms between 1967 and 1972. The University of California has sharply trimmed its expansion plans, partly because of funding problems, but also because of enrollment problems caused by the rapid rise in instructional fees, the cresting of the college-age population, and the post-Vietnam disinterest in college life. The optimistic plans of the 1960's, which envisioned a number of major teaching and research facilities scattered around the state, have now been shelved.

Other Symptoms of Deceleration

The scaling-down of the aerospace-knowledge industry complex is only one symptom of the deceleration in California's characteristic pattern of rapid growth. More basically, the rate of population growth has sharply declined, in terms of both births and in-migration. (Nonetheless, California has added more people than any other state except Florida since the beginning of this decade.) The natural increase in 1974 totalled only 117,000—less than in 1950, when the state's population was only about half as large as today's 20.7 million total. Young California families, like their counterparts elsewhere, thus appear to have voted for zero population growth, by reducing average family size below the 2.1-child level necessary to sustain long-term population growth.

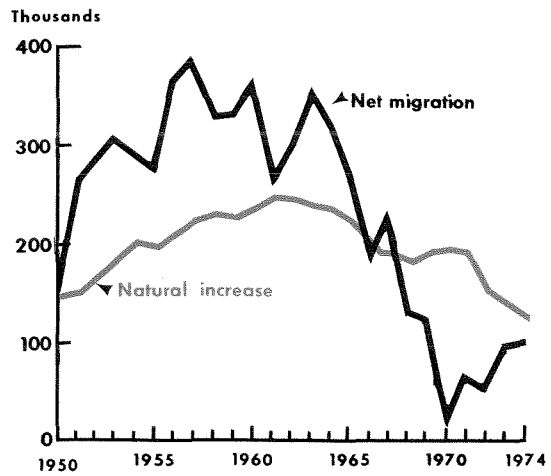
The cause is difficult to pinpoint, but it may

have something to do with relative feelings of affluence among young families. The postwar baby boom can be explained by the ability of young adults in that time period to achieve incomes quite high in relation to their Depression-era expectations. But today, the large numbers of young adults scrambling for jobs in the marketplace have had great trouble meeting the economic goals they formed in the affluent postwar period. They are less willing to have children, and with the universal spread of effective means of birth control, they are more successful than their predecessors in actually limiting family size. Whatever the cause, the phenomenon means a sharp compression of those California markets specializing in children's goods and services, including elementary education, and it also means the growing presence in the labor market of large numbers of young women who formerly would have been involved in child-care rather than job-seeking.

Even more strikingly, migration-based growth practically disappeared in the early 1970's. For decades, migrants had accounted for about three-fifths of the state's population growth, with the net inflow rising at times to as much as 1,000 a day. The migrant flow has always included a disproportionate number of productive adults, whose home states (and nations) have borne the burden of raising and educating them. This growth factor in particular is now missing (Chart 3).

Chart 3

Sources of Population Change



To a certain extent, the recent decline should have been expected because of the close relationship between migration and job opportunities in the aerospace-knowledge industry complex. Migration has always declined during recession periods, but not nearly so much as in the 1970's. Even during the sharp 1958 recession, net migration reached 325,000 for the year. In contrast, the net increase was only 16,000 in the much shallower 1970 recession, and it averaged only 71,000 annually during the 1971-73 recovery. Part of the explanation lies in the abortive nature of the recovery, which was considerably weaker in California than elsewhere because of the continued weakness of the aerospace industry; thus, the unemployment rate in 1973 averaged 7.0 percent in California as against 4.7 percent in the rest of the nation. But there are other explanatory factors as well. A California Poll taken in 1971 indicated that almost one-third of the population would leave the state if given the chance, not simply because of the lack of job opportunities but also because of problems of pollution and overpopulation.

After a century of obsession with economic growth, many Californians have become disenchanted with the pace and nature of their earlier growth. For example, in 1972 California's electorate—over the opposition of major business and labor groups—imposed a moratorium on all building along the coastline from Oregon to the Mexican border. The measure was designed to protect the entire 1,200-mile coastline from uncontrolled development by setting up regulatory commissions to grant or withhold building permits for any projects planned within 1,000 yards of the ocean. This vote followed hard on the heels of a California Supreme Court decision requiring environmental-impact statements to be filed with building-permit requests on all private construction projects involving a "significant" environmental impact. Another political factor to be faced in June 1976 is the "nuclear safeguards" initiative. By voting af-

firmatively, California's electorate could empower the legislature to impose extremely rigid safety and insurance requirements over all commercial-power reactors, and thus could heavily influence the future of the nation's utility industry.

For that matter, California is peculiarly disadvantaged by the energy crisis, because it obtains 89 percent of its energy needs from the scarcest fuels, petroleum and natural gas, compared with a 78-percent dependence for the nation as a whole. (Of course, it has large oil resources offshore, but those reserves remain unexploited because of public fears of another Santa Barbara oil spill.)[5] In addition, California's consumption is concentrated in the least essential uses, such as private auto transportation, which accounts for almost one-fourth of all energy consumed in the state. California's heavy dependence on the automobile, and the long distances traveled within the state, thus make her especially vulnerable to the energy crisis. Suburban home construction, suburban commercial development, auto retailing, resort activities, and many other elements of the life-style which Californians have built around the private auto thus would be seriously affected in the event of a deepening crisis.

California's economic salvation depends upon the problem-solving capabilities of the state's justly famed, albeit recently besieged, knowledge industry. University training in the sciences, and especially the application of scientific advances to the development of new industries and the solution of old problems, should play an important role in the strengthening of the state's economy. In the case of the aerospace industry, California's universities trained large numbers of highly-skilled scientists and technicians; the research centers concentrated around those universities attracted other highly-trained workers; and the foundation was laid for the state's dominance of this crucial new industry. The impetus from the aerospace sector of course has weakened in recent years, but the prime mover—education and research—stands ready to provide the spark of life to new industries as yet unborn.

FOOTNOTES

1. Edgar S. Dunn, "A Statistical and Analytical Technique for Regional Analysis," *1960 Papers and Proceedings of the Regional Science Association.*

2. James R. Kurth, "Why We Buy the Weapons We Do," *Foreign Policy,* Summer 1973.

3. David Packard, "Should the Aerospace Industry Reorient to Changing Priorities?" *Business Economics,* May 1973, p. 48.

4. Edward F. Denison, *The Sources of Economic Growth in the United States.* New York: Committee for Economic Development, 1962.

5. See Yvonne Levy's article in this issue of the *Review.*